Mexicali Earthquakes February 14, 2008

Mexicali, Mexico and the region around it were shaken by a swarm of earthqukes beginning with a Magnitude 5.1 at 11:12pm Friday night, February 8. The epicenter was located 16 miles (26 kilometers) from Mexicali and was felt strongly there as well as at Yuma, Arizona and elsewhere in Arizona and southern California. No damage or injuries were reported from the region, but power was knocked out for 40 minutes to some 400,000 and cell phone service was disrupted to 1.2 million. Numerous aftershocks have followed the largest being 5.1 magnitude, and the last so far early this morning (February 14). The second 5.1 tremor caused a school wall to collapse in Mexicalli. The first shock was located along a plate tectonic boundary between the North American and Pacific plates that is marked by faults (Figure 1). The epicenter is on the Cerro Prieto fault the trace of which trends northwesterly in this area (Figure 2).

The earthquake waves from this swarm were well recorded by the seismic stations of the northern Arizona network of the Arizona Earthquake Information Center at Northern Arizona University, and the Transportable Array stations of the Geoscope Project that are also presently located in the state(Figures 3-5). The information on the two largest earthquakes of the swarm are as follows:

February 8, 2008 Magnitude (Mw) 5.1 11:12:07 pm local time 32.42N x 115.30W

February 11, 2008 Magnitude (Mw) 5.1 10:29:32 am local time 32.41N x 115.27W

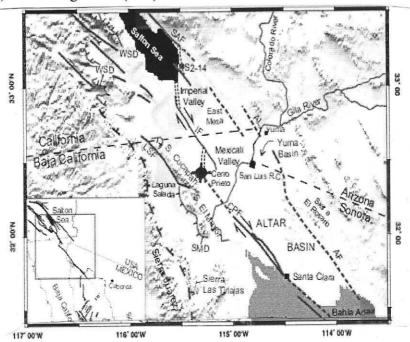


Figure 1. Location of earthquake activity in northern Mexico, February 8-14, 2008 (). CPF= Cerro Prieto Fault; IF= Imperial Fault. Half arrows=direction of fault slip.

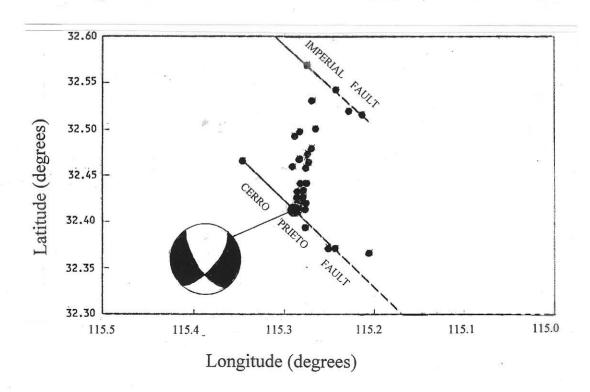


Figure 2. Area of earthquake activity enlarged from Figure 1. Small circles show epicenters of small earthquakes that were recorded and located over a period of one month in 1988 (Bausch, 1988). The location of the epicenter of the February Mw5.1 tremor is indicated by the large filled circle on the trace of the Cerro Prieto fault. The beach ball display shows the fault plane solution for the earthquake and can be interpreted as dominantly strike slip (see arrows for fault in Figure 1).

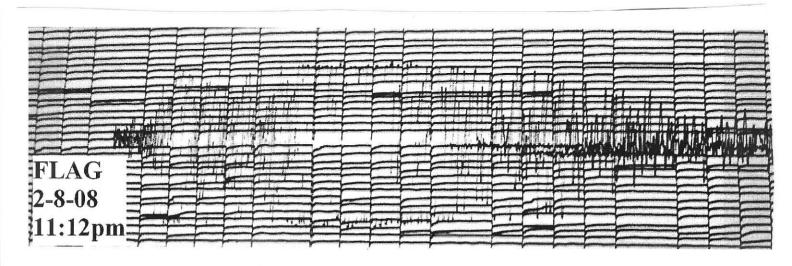


Figure 3. A copy of the seismogram for the February 8, 2008 earthquake as it was recorded at the Flagstaff (FLAG) station of the northern Arizona network.

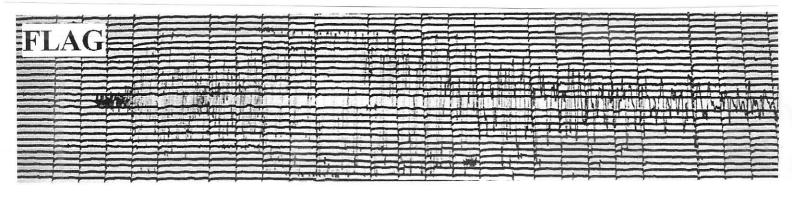


Figure 4. A copy of the seismogram for the February 11, 2008 earthquake as it was Recorded at the Flagstaff (FLAG) station of the northern Arizona network.

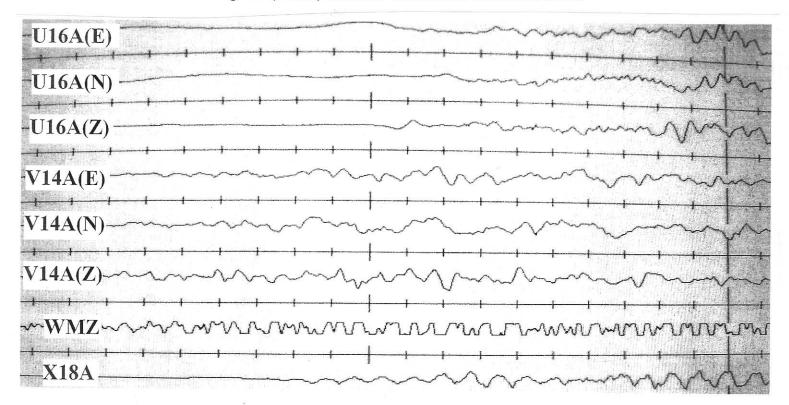


Figure 5. The Mexicali earthquake as recorded by the northern Arizona seismic network Williams station (WMZ) and several stations of the Geoscope Transportable Array: X18A (Snowflake); U16A (Tuba City); V14A (Peach Springs). N=North, E=East, Z=Vertical seismometers.

References:

Bausch, D.B. (1988). Seismotectonics of the Cerro Prieto Geothermal Area: Northern Arizona University Masters Thesis, 161pp.

Contact Information

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